

cont'd
B2 vicinity having an extent limited to a maximum distance of the image beyond which resolution of the image at a center of a field of the device is degraded.

B3 24. (Amended) The device as claimed in claim 14, wherein the diffractive field mirror is situated in the vicinity of the second intermediate image.

REMARKS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 14-26 are pending in the present application. Claims 14, 15 and 24 have been amended by the present amendment.

In the outstanding Office Action, Claim 16 was objected to; Claims 14-16, 20, 25 and 26 were rejected under 35 U.S.C. § 102(b) as anticipated by Wood; Claims 17-19 were rejected under 35 U.S.C. § 103(a) as unpatentable over Wood in view of Chen et al; and Claims 23 and 24 were indicated as allowable if rewritten in independent form.

Regarding the objection to Claim 16, Claim 15 has been amended to recite "an intermediate image." Therefore, it is respectfully requested the objection to Claim 16 be withdrawn.

Claims 14-16, 20, 25 and 26 stand rejected under 35 U.S.C. § 102(b) as anticipated by Wood. This rejection is respectfully traversed.

The outstanding Office Action states Wood discloses an optical device for a helmet viewfinder comprising optical means for correcting distortion of an image presented to the user which is due to the off-axis spherical concave mirror, said optical means comprising a diffractive field mirror (28) as described in column 3, lines 10-40.

However, Applicants note in Wood, the diffractive field mirror corrects optical aberrations, not the distortions. In more detail, the word “aberrations” which is used in column 3, line 30 means optical aberrations. Indeed, column 3, lines 22-23 states “(this positioning) produces optical aberrations, particularly when a large pupil and large field of view are desired.” Optical aberrations include spherical aberrations, coma and astigmatism... Distortion is not an optical aberration, but is an image aberration. It is a geometrical flaw (deformation of the shapes) not a resolution flaw (optical quality of the image). The size of the pupil has no effect on distortion (but it has an effect on optical aberrations). Further, Wood discloses a heads up display (HUD), not a helmet viewfinder. A heads up display is an optical device with a large pupil (e.g., 120 mm) and a field of view between 20° to 30°. The heads up display shows only one image to both eyes.

A helmet viewfinder is an optical device with two small pupils (about 15 mm), a short focal length (between 25 and 30 mm) and a large field of view (about 40°). The helmet viewfinder shows two images (one per eye). Distortion is mentioned in Woods using a combiner with flat outer surfaces (see column 3, lines 40-43), to prevent real world optical distortion.

However, nothing is said about the distortion of the cathode-ray-tube image. The correction of the image flaw is usually made using a pre-distorted image produced with the cathode ray tube. According to the invention, the distortion is not electronically corrected but optically corrected.

Accordingly, it is respectfully submitted Claim 14 and each of the claims depending therefrom are allowable.

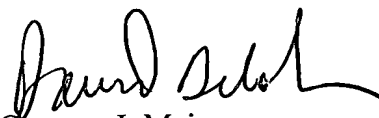
Claims 17-19 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Wood in view of Chen et al.

Claims 17 and 19 depend on Claim 14, which as discussed above is believed to be allowable. Further, it is respectfully submitted Chen et al also do not teach or suggest the features recited in independent Claim 14. Therefore, it is respectfully requested this rejection also be withdrawn.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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IN THE CLAIMS

Please amend the claims as follows:

--14. (Amended) An optical device for a helmet viewfinder presenting a collimated image to a user, comprising:

an imager and an off-axis spherical concave mirror;

[optical means] a diffractive field mirror for correcting distortion of an image presented to the user which is due to the off-axis spherical concave mirror[, said optical means comprising a diffractive field mirror].

15. (Amended) The device as claimed in claim 14, wherein the diffractive field mirror is situated in a vicinity of an intermediate [range] image formed by said optical device, the vicinity having an extent limited to a maximum distance of the image beyond which resolution of the image at a center of a field of the device is degraded.

24. (Amended) The device as claimed in claim [23] 14, wherein the diffractive field mirror is situated in the vicinity of the second intermediate image.--